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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

DHINGRA, RAKESH KUMAR

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/552,937	Applicant(s) SPECIALE ET AL.	
	Examiner RAKESH K. DHINGRA	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/05, 10/23/07, 10/29/07</u> . | 6) <input checked="" type="checkbox"/> Other: <u>More IDS-02/08, 04, 08</u> . |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of claims 22-32 (Sub-combination) in the reply filed on 8/15/08 is acknowledged. Applicant's argument that in view of the present amendment to claim 1, claim 22 is now generic to claim 1 and thus remaining claims 2-21 that include limitations of generic claim 22 should also be contemporaneously examined, is found persuasive. Accordingly all the pending claims 1-32 have been examined as detailed below.

Information Disclosure Statement

In IDS dated 10/29/07 – document numbers of following documents were not correctly listed (when compared with the documents as forwarded by the applicant), and the same have been corrected and the documents considered:

SI No in IDS	Doc. No.	Corrected Doc. No.
1	PCT/IT02/00363	PCT/IT03/00363
2	PCT/IT02/00363	PCT/IT03/00363

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 recites the limitation "the same pipe" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 22-27 and 29-32 are rejected under 35 U.S.C. 102(a) as being anticipated by Kai (JP 2004-063779) {equivalent US 2004/0144323 and used hereinafter}.

Regarding Claims 22, 32: Kai teaches an apparatus for epitaxial wafer production and comprising:

A support element 4 (susceptor) having a substantially disc-shaped form with a substantially flat upper side provided with at least one cavity 13 for a substrate or wafer and with a substantially flat bottom side, wherein the bottom side is provided with depressed areas 25 shaped to receive the thrust of gas flows (e.g. Figs. 1, 2, 8-12 and para. 0050, 0051, 0088).

Regarding Claims 23, 25: Kai teaches the depressed areas 27 are bound by three sides and have at least one curved side (Fig. 9).

Regarding Claim 24: Kai teaches the gas passages 27 have at least one straight side (Figs. 8-12).

Regarding Claims 26, 27, 29, 30: Kai teaches the depressed areas 27 have a variable depth and the depth increases in the radial direction with respect to its axis (near tapered surface 31). Kai also teach that the depressed area 27 reaches the edge of bottom face of the susceptor 4

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and one side of the depressed area 27 coincides with a section of the edge of its bottom side [Fig. 12A].

Regarding Claim 31: Kai teach that the edges of depressed area 27 positioned and shaped to receive the thrust of gas flows (para. 0089-0097).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 28 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Kai (JP 2004-063779) {equivalent US 2004/0144323 and used hereinafter}.

Regarding Claim 28: Kai teaches all limitations of the claim except the depth of depressed areas diminishes or increases in the tangential direction with respect to axis of support

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element. Kai however teaches that the shape, number and configuration of depressed area is optimized as per process limitations like rate of gas flow. It would be obvious to optimize the depth of depressed area in a tangential direction with respect to axis as per teaching of Kai as per process limitations like rate of gas flows

In this regard courts have ruled:

It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable through routine experimentation in the absence of a showing of criticality. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Claims 1-21 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kai (JP 2004-063779) {equivalent US 2004/0144323 and used hereinafter} as applied to claims 22-27, 29-32, in view of Bhat (US 5,226,383).

Regarding Claims 1, 8, 18, 20, 21: Kai teaches all limitations of the claim including a rotating support element 4 (susceptor) having a substantially flat upper side provided with at least one cavity 13 for epitaxial production of a wafer and a substantially flat bottom side, and with plurality of symmetrically arranged identical depressed areas (gas passages) 27 on its bottom side that are inclined and preferably skew with respect to its axis.

Kai does not teach - a fixed base element having a substantially flat surface in which a substantially cylindrical seat with a substantially flat bottom is formed; the support element being housed inside the seat and being able to rotate about the axis of the seat; and

wherein the gas passages of the support element emerge inside the seat in directions which are inclined and preferably skew with respect to seat axis, in such a way as to lift and rotate the support element.

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Bhat teaches a wafer processing apparatus comprising: a fixed base element 10 having a substantially flat surface in which a substantially cylindrical seat 14 with a substantially flat bottom is formed. Bhat further teach a disc shaped movable support element 12 with gas passages 38, 40, 42 in its bottom surface, and being housed inside the seat 14 and being able to rotate about the seat axis. Bhat also teach that gas passages 38, 40, 42 emerge inside the seat 14 in directions which are inclined and preferably skew with respect to seat axis, in such a way as to lift and rotate the support element. Bhat additionally teach that shape and extent of gas passages 38, 40, 42 can be optimized to obtain desired gas flow pattern for lift and rotation of the susceptor (e.g. Figs. 1-5 and col. 2, line 30 to col. 4, line 55)

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a fixed base with a seat and the support element housed inside the seat taught by Bhat in the apparatus of Kai to obtain rotation of the support element besides gas flow for wafer processing.

Regarding Claim 2: Bhat teaches that when assembled the upper surface of support element 12 is flush with the top surface of the base 10 (col. 3, lines 5-22).

Regarding Claim 3: Bhat teach an annular channel 26 for discharge of gas (through pipes 32) [col. 2, lines 47-67].

Regarding Claim 4: Bhat teaches the passages 38, 40, 42 branch off from gas pipe 24 of base 10 (col. 3, lines 22-35).

Regarding Claim 5: Kai teaches that number of and configuration of gas passages 27 is optimized as per process limitations, like rate of gas flow. It would be obvious to optimize the

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depth of depressed area in a tangential direction with respect to axis as per teaching of Kai as per process limitations like rate of gas flows

In this regard courts have ruled:

It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable through routine experimentation in the absence of a showing of criticality. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Regarding Claim 6: Kai teaches hole 22 and pins 23 that help to maintain the susceptor arm 15 stationary during rotation of susceptor (para. 0058-0060).

Regarding Claim 7: Bhat teaches the base 10 has a cylindrical protuberance with a cylindrical pin 22 that mates with a hole 36 in the support element. It would be obvious to have the base with a cylindrical hole and the support element having a pin that mate with each other, as per rearrangement of parts, which is not considered patentable (col. 2, line 45 to col. 3, line 20).

In this regard courts have ruled:

Mere rearrangement of parts which does not modify the operation of a device is prima facie obvious. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).

Regarding Claims 9, 11: Kai teaches the depressed areas 27 are bound by three sides and have at least one curved side (Fig. 9).

Regarding Claim 10: Kai teaches the gas passages 27 have at least one straight side (Figs. 8-12).

Regarding Claims 12, 13, 15, 16: Kai teaches the depressed areas 27 have a variable depth and the depth increases in the radial direction with respect to its axis (near tapered surface

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31). Kai also teach that the depressed area 27 reaches the edge of bottom face of the susceptor 4 and one side of the depressed area 27 coincides with a section of the edge of its bottom side [Fig. 12A].

Regarding Claim 14: Kai teaches all limitations of the claim except the depth of depressed areas diminishes or increases in the tangential direction with respect to axis of support element. Kai however teaches that the shape, number and configuration of depressed area is optimized as per process limitations like rate of gas flow. It would be obvious to optimize the depth of depressed area in a tangential direction with respect to axis as per teaching of Kai as per process limitations like rate of gas flows

In this regard courts have ruled:

It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable through routine experimentation in the absence of a showing of criticality. *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Regarding Claim 17: Kai teach that the edges of depressed area 27 positioned and shaped to receive the thrust of gas flows (para. 0089-0097).

Regarding Claim 19: Bhat teaches that apparatus is suitable for loading/unloading of support element 12 into/from base 14 (Fig. 1).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAKESH K. DHINGRA whose telephone number is (571)272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rakesh K Dhingra/
Examiner, Art Unit 1792

/K. M./
Primary Examiner, Art Unit 1792